

# ZSL SCIENCE AND CONSERVATION EVENT

Tuesday 9 July 2019

The Meeting Rooms, Zoological Society of London,  
Regent's Park, London NW1 4RY

## AGENDA

### Shifting tides: how can small-scale fisheries help address the Sustainable Development Goals?

Chaired by Dr Rebecca Short, University of Exeter and Sofia Castelló y  
Tickell, University of Oxford

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Receive the following communications

**Professor Jeppe Kolding, University of Bergen**  
*SDGs, Food Security and Small-Scale Fisheries*

**Professor Christina Hicks, Lancaster University**  
*Malnourished in a Sea of Micronutrients*

**Dr Philippa Cohen, Worldfish**  
*Small-scale fisheries; beneath the surface*

## ABSTRACTS

# Shifting tides: how can small-scale fisheries help address the Sustainable Development Goals?

### SDGs, Food Security and Small-Scale Fisheries

*Professor Jeppe Kolding, University of Bergen*

Small-scale fisheries (SSF) contribute to more than half the global fish production, and employ 90 percent of the world's fishers, primarily from the global south. When compared to other food production systems, fisheries in general and SSFs in particular, have the least impact in terms of contributing to the emission of greenhouse gases and the use of freshwater, fertilisers, insecticides or herbicides, and small pelagic fish are the most energy efficient supply of human food products available. However, only 3 percent of human food is of aquatic origin and the importance and qualities of fish are not fully recognised in the global food security discourse or in the Sustainable Development Goals (SDGs), such as SDG2 (Zero hunger) and SDG3 (Good Health), and SDG14 (Life below water) which promotes the conservation and sustainable use of aquatic resources. Fish and fisheries are almost invisible in strategies to achieve SDG2 and SDG3, and nutrition and food security are not the primary focus of SDG14. Thus, fish is strikingly missing from strategies for reducing the widespread occurrence of hidden hunger (nutrient deficiency) and the fact that fish play a significant role in combating the triple burden of hunger, micronutrient deficiencies and non-communicable diseases is seldom recognised. Small, highly productive fish species are ubiquitous in all aquatic environments from large marine ecosystems to seasonal ponds, but their significance is underrated and little understood as they are consumed locally and often go unrecorded in catch statistics (so-called hidden harvest). A transition towards increased consumption of small fish is thus justifiable, from both a health and environmental sustainability perspective. Catching small fish, which are simply sun-dried and consumed whole, is the most high-yielding, eco-friendly, low CO<sub>2</sub>-emission and nourishing way of utilising aquatic resources, but the obscure nexus of 'hidden hunger' and 'hidden harvest' has impeded a common understanding and appreciation of the undervalued potential and importance of small fish.

**Jeppe Kolding** is professor in fisheries science at University of Bergen, specialising in small-scale fisheries in developing countries and their importance in terms of food and nutrition security. Previously he was employed by the Institute of Marine Research, Centre for Development Cooperation in Fisheries, where he worked with the R/V Dr. Fridtjof Nansen programme under FAO. He has lived and worked for several years in various African countries and has experience from short-term engagements in more than 25 developing countries. Jeppe's primary research interest is fish stock assessment, ecology, harvest strategies and management of small-scale tropical fisheries, both inland and marine. He has been a member of the IUCN/CEM Fisheries Expert Group (FEG [http://www.ebcd.org/en/IUCN\\_CEM\\_FEG/](http://www.ebcd.org/en/IUCN_CEM_FEG/)) since 2008 where he initiated the work on 'Balanced harvest'.

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## **Malnourished in a Sea of Micronutrients**

*Professor Christina Hicks, Lancaster University*

Micronutrient deficiencies account for an estimated one million premature deaths annually and reductions in national GDP of up to 11%, highlighting the need for food policies focused on improving nutrition, rather than simply increasing volumes of food. Although often overlooked, fish are a rich source of bioavailable micronutrients essential to human health. Yet, a lack of understanding of the nutritional composition of most fish and how nutrient yields vary among fisheries has hindered policies needed to effectively harness the potential of fisheries for food and nutrition security. Here, using the concentration of seven nutrients in more than 350 species of marine fish, we estimate how environmental and ecological traits predict nutrient content among marine finfish species. We use this predictive model to quantify spatial patterns of nutrient concentration from marine fisheries yields globally and compare nutrient yields to the prevalence of micronutrient deficiencies. We find that species from tropical thermal regimes contain higher concentrations of calcium, iron, and zinc; species from cold thermal regimes or those with a pelagic feeding pathway contain higher concentrations of omega-3 fatty acids; and smaller species contain higher calcium, iron, and omega-3 fatty acids. For a number of countries with inadequate nutrient intakes, the nutrients available in marine finfish catches exceed the dietary requirements for coastal (within 100km) populations, and a fraction of current landings could be particularly impactful for children under 5 years of age. Our analyses show that fish-based food strategies have the potential to substantially contribute to food and nutrition security, but that retaining a greater proportion of the catch locally and ensuring access to this nutrient-rich food, are key to achieving this potential.

**Christina Hicks** is an Environmental Social Scientist interested in the relationships individuals and societies form with nature; how these relationships shape people's social, environmental, and health outcomes; and how they create sustainable livelihood choices. Christina is a professor within the Political Ecology group at Lancaster University's Environment Centre. She gained her PhD from James Cook University in Australia and was an early career fellow at Stanford University before joining Lancaster University where she runs a large European Research Council grant FAIRFISH. Christina's current research spans tropical fisheries in east Africa, west Africa, and Polynesia.

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## **Small-scale fisheries; beneath the surface**

*Dr Philippa Cohen, Worldfish*

Small-scale fisheries operate across the Worlds in lakes, rivers, floodplains, coasts and seas and engage an estimated 32 million women and men, the majority of which live in developing countries. Although prolific, small-scale fisheries have typically been undervalued and even invisible in national and global accounts and to policy makers. Yet, in recent policy developments small-scale fisheries have received unprecedented recognition, for example with explicit mention in SDG 14: life below water. Whilst on the surface SDG14 suggests concern for the fish below water, it recognizes fisheries as an inherently social phenomena. In this presentation I look beneath the social surface of small-scale fisheries to examine how gender is currently being framed, examined and even challenged by recent policy and research. To do so I draw on the efforts, research approaches and insights of many gender researchers and feminist scholars to reflect on how we can tackle gender inequities not only within, but also through small-scale fisheries. These insights include making the invisible visible,

participation beyond presence and digging deeper into the structures that perpetuate patterns of inequality. I summarise the challenges that remain to research, policy and development investments to better address equality and equity improvements in small-scale fisheries and beyond.

**Philippa (Pip) Cohen** is originally from Tasmania, Australia – but she left over 15 years ago to start a career in fisheries for development – leaving one island for the even smaller, but much warmer, islands of Tonga. Pip then lived and worked through Fiji, Solomon Islands and Timor Leste, and now is based in Penang, Malaysia where she heads up the global small-scale fisheries research program of WorldFish. Pip is an interdisciplinary Fisheries and Social Scientist (aligned most closely to Political Ecology) with research interests in equitable governance of fisheries systems in the face of ocean, water, and agricultural transformations. Pip's research is frequently embedded in, and/or critically observant of, management and development processes.

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### **ZSL Library Events**

The library will continue their monthly talks at **4:45pm before each Science & Conservation Event** in next year's programme, and each one will focus on different examples from their Special Collections! No need to book, just come along, or find out more here...

<https://www.zsl.org/about-us/zsl-library-collection>.

### **ZSL Wild Science Podcast**

We will be creating a podcast relating to this event topic, so be sure to keep an ear out for it in the following weeks as well! Listen to more of our award winning **ZSL Wild Science podcast** episodes hosted by Research Fellow Dr Monni Bohm here... <https://www.zsl.org/zsl-wild-science-podcast>.

Please feel free to contact Eleanor Darbey ([eleanor.darbey@zsl.org](mailto:eleanor.darbey@zsl.org)) if you have any queries.

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**This is the last event of our 2018-2019 programme, thank you all for your support and enthusiasm.**

**Look out for our new 2019-2020 programme of events in September!**